USGS science for a changing world

Earthquake Shaking — Green Alert

GSN ANSS USAID FROM THE AMERICAN PEOPLE

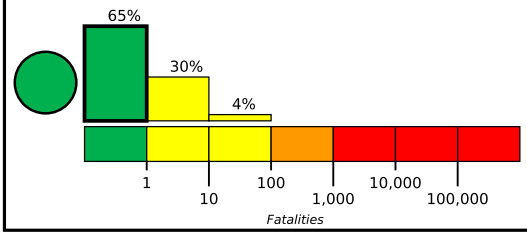
M 5.4, Molucca Sea

Origin Time: 2021-12-30 13:13:19 UTC (Thu 22:13:19 local)
Location: 0.1663° S 125.2453° E Depth: 59.6 km

PAGER Version 4

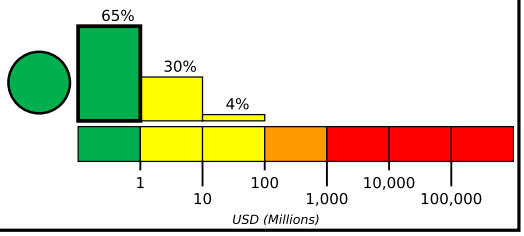
Created: 1 day, 0 hours after earthquake

Estimated Fatalities



Green alert for shaking-related fatalities and economic losses. There is a low likelihood of casualties and damage.

Estimated Economic Losses

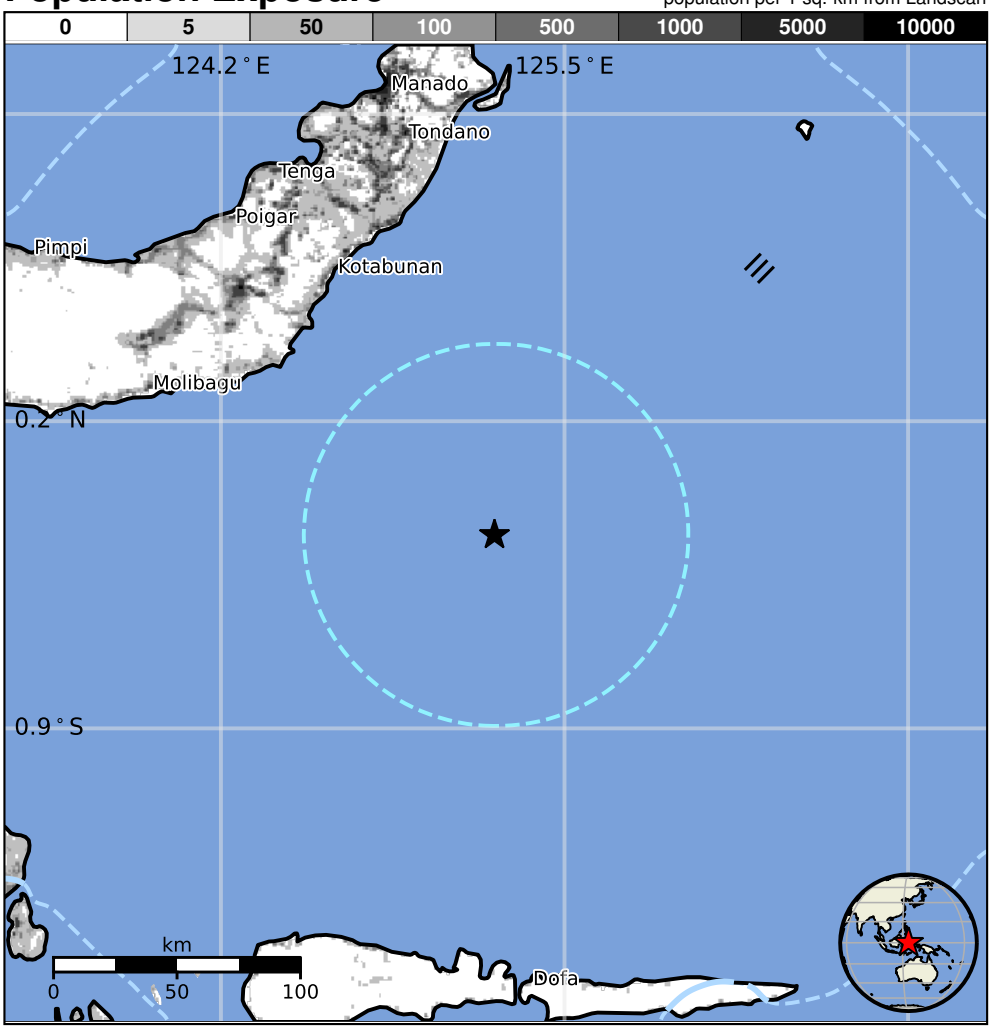


Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k=x1000)		–*	2,250k	0	0	0	0	0	0	0
ESTIMATED MODIFIED MERCALLI INTENSITY		I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING		Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures	None	None	None	V. Light	Light	Moderate	Mod./Heavy	Heavy	V. Heavy
	Vulnerable Structures	None	None	None	Light	Moderate	Mod./Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area.

Population Exposure



Structures

Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though resistant structures exist. The predominant vulnerable building types are unreinforced brick with concrete floor and precast concrete frame with wall construction.

Historical Earthquakes

Date (UTC)	Dist. (km)	Mag.	Max MMI(#)	Shaking Deaths
2007-01-21	187	7.5	VI(283k)	3
1994-10-08	325	6.8	VII(5k)	1
2000-05-04	220	7.5	VIII(17k)	46

Selected City Exposure

from GeoNames.org

MMI	City	Population
III	Tutuyan	<1k
III	**Kotabunan**	**<1k**
III	Lolayan	<1k
III	Tombatu	<1k
III	Passi	<1k
III	Modayag	<1k
III	**Tondano**	**33k**
III	Tomohon	28k
III	**Manado**	**452k**
III	Bitung	137k
III	Laikit, Laikit II (Dimembe)	8k

bold cities appear on map. (k=x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.

https://earthquake.usgs.gov/earthquakes/eventpage/us7000g7yh#pager

Event ID: us7000g7yh